

CLAIMS

1. A method of producing detergent including a step of electrolyzing a solution containing at least one of carbonate and bicarbonate of alkali metal as a solution to be electrolyzed.

2. The method of producing detergent as set forth in claim 1, wherein said solution to be electrolyzed is supplied at least to an anode chamber of an electrolysis cell having a cathode chamber and an anode chamber separated by a diaphragm and electrolyzed, and the obtained cathode water or anode water is used as detergent.

3. The method of producing detergent as set forth in claim 2, wherein said solution to be electrolyzed is supplied to both of a cathode chamber and an anode chamber of an electrolysis cell having a cathode chamber and an anode chamber separated by a diaphragm and electrolyzed, and the obtained cathode water is used as detergent.

4. The method of producing detergent as set forth in claim 1, wherein said solution to be electrolyzed is supplied at least to an anode chamber of an electrolysis cell having a cathode chamber and an anode chamber separated by a diaphragm and electrolyzed, and the obtained cathode water, anode

water, or mixture of the two is further added and dissolved at least one of carbonate and bicarbonate of alkali metal after the electrolysis is completed, and thus obtained solution is used as detergent.

5 5. The method of producing detergent as set forth in claim 1, wherein said solution to be electrolyzed is supplied at least to an anode chamber of an electrolysis cell having a cathode chamber and an anode chamber separated by a diaphragm and
10 electrolyzed, and the obtained cathode water and anode water are mixed after completing the electrolysis, and thus obtained solution is used as detergent.

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15 6. A method of producing detergent as set forth in claims 1 to 5, including a step of diluting said detergent with water.

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20 7. The method of producing detergent as set forth in claims 2 to 4, wherein said cathode water or the mixed water of said cathode water and anode water has a pH of 9.5 to 12.0.

25 8. The method of producing detergent as set forth in claim 7, wherein at the time of diluting or after diluting said detergent, fatty acid or soap is added, and thus obtained solution is used as detergent.

 9. The method of producing detergent as set

forth in claim 2 ~~or 4~~, wherein said anode water has a pH of 6 to 8.

10. The method of producing detergent as set forth in claims 1 ~~to 9~~ wherein the electric conductivity of said detergent is 100mS/m or more.

11. The method of producing detergent as set forth in claim 9, wherein said detergent includes washing aid agents.

12. The method of producing detergent as set forth in claim 11, wherein said washing aid agents include an antisoil redeposition.

13. The method of producing detergent as set forth in claim 11, wherein said washing aid agents include at least one of fatty acid base ester and dispersion agent as nonionic surfactant.

14. The method of producing detergent as set forth in claim 11, wherein said washing aid agents include water softening agent.

15. A method of producing detergent including a step of making a solution containing at least one of carbonate ion and bicarbonate ion and alkali metal ion contact solid carbonate composite which is insoluble or hard to be dissolved in water.

16. The method of producing detergent as set forth in claims 1 ~~to 14~~, including a step of making

said detergent contact solid carbonate composite which is insoluble or hard to be dissolved in water.

17. A detergent producing apparatus, comprising:

5 an electrolysis cell having an anode chamber and a cathode chamber and a diaphragm for separating the two;

a solution tank for making a solution by dissolving at least one of carbonate and bicarbonate of alkali metal in water;

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a first supply means for supplying a solution in said solution tank at least to the anode chamber of said electrolysis cell; and

a mixing means for mixing after completion of the electrolysis anode water and cathode water respectively generated in said anode chamber and said cathode chamber to make mixed electrolytic water.

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18. The detergent producing apparatus as set forth in claim 17, wherein said mixing means comprises a water tank for storing anode water and cathode water after completing said electrolysis and a second supply means for supplying the anode water and cathode water generated in said anode chamber and cathode chamber to said water tank.

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25 19. A detergent producing apparatus,

comprising:

an electrolysis cell wherein an anode chamber and a cathode chamber separated by a diaphragm;

5 a solution tank for making a solution by dissolving at least one of carbonate and bicarbonate of alkali metal in water;

a first supply means for supplying a solution in said solution tank at least to the anode chamber of said electrolysis cell;

10 a detergent tank for storing detergent discharged from said electrolysis cell; and

a third supply means for supplying one of cathode water after completing the electrolysis generated in said cathode chamber and anode water after completing the electrolysis generated in said anode chamber to said detergent tank.

20. The detergent producing apparatus as set forth in claim 19, comprising a means for adding and dissolving at least one of carbonate and bicarbonate of alkali metal to at least one of anode water generated in said anode chamber and cathode water generated in said cathode chamber.

21. A washing machine comprising a detergent producing apparatus for producing detergent by

electrolyzing a solution containing at least one of carbonate and bicarbonate of alkali metal;

a detergent tank for storing said detergent;

5 a washing tub for washing;

a means for supplying diluting water of said detergent to said washing tub; and

a means for supplying said detergent from said detergent tank to said washing tub.

10 22. The washing machine as set forth in claim 21, further comprising a filter filled with solid carbonate composite which is insoluble or hard to be dissolved in water between said detergent tank and said washing tub.

15 23. The washing machine as set forth in claim 21 ~~or 22~~, further comprising:

A a judgement means for judging an amount of washing items and/or an amount of washing water in said washing tub and a setting means for setting the
20 amount of washing items and the amount of washing water; and

a control means for outputting to said detergent supply means a control signal for supplying the washing tub an appropriate amount of detergent for
25 washing based on an output signal from said judgement

means or said setting means.

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5 24. The washing machine as set forth in claims
21 to 23, further comprising a container for storing
washing aid agents, a washing aid agents supply means
for supplying the washing aid agents from said
container to said washing tub, and a control means for
outputting to said washing aid agent supply means a
control signal for supplying an appropriate amount of
the washing aid agents for washing to the washing tub.

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sub A1 25. A washing machine provided with the
detergent producing apparatus as set forth in claims
17 to 20 or the washing apparatus as set forth in
claims 21 to 24.

15 26. A dish washer provided with the detergent
producing apparatus as set forth in claims 17 to 20 or
the washing apparatus as set forth in claims 21 to 24.

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